Claims:

1. A method of transmitting signals from a transmitter comprising two or more transmit antennas in a mobile telecommunications network, the method comprising

determining channel state information,

estimating reliability of the channel state information,

space time block encoding at least one data sequence,

before transmitting the data sequence, applying to the data sequence a linear transformation so as to at least partially compensate for channel variations, the linear transformation being dependent upon the channel state information and dependent upon the estimated reliability of the channel state information.

2. A method according to claim 1, in which the channel state information is channel estimates.

3. A method according to claim 1, in which the reliability of the channel state information is determined from latest channel state information and previous channel state information.

4. A method according to claim 3, in which the latest channel state information is given a weight relative to the previous channel state information, the weight being dependent upon channel state information stability.

5. A method according to claim 1, in which where the channel state information is channel estimates in the form of channel coefficients, and the channel state information for a time interval (n) is assumed accurate for the previous time interval (n-1), the channel state information reliability (ρ) is determined as

$$\rho(1) = 0$$

$$\rho(n) = (1-\alpha)\mathbf{hf}^{*} + \alpha\rho(n-1)$$

where **h** is the channel vector , **f** is the latest channel state information , and α is a forgetting factor.

6. A method according to claim 5 in which α is selected dependent on the size of the variation between the latest channel state information and the last previous channel state information.

7. A method according to claim 1, in which the linear transformation is applied before block encoding the data sequence.

8. A method according to claim 1, in which the linear transformation is applied after block encoding the data sequence.

9. A method according to claim 1, in which the space-time block encoding is such that at a first transmission time instant first symbol is transmitted from a first of the two antennas and a second symbol is transmitted from the second of the two antennas, then at the next transmission instant a negative complex conjugate of the first symbol is transmitted from the first antenna and a complex conjugate of the second symbol is transmitted from the second antenna.

10. A method according to claim 9, in which the space-time block encoding is Alamouti space-time block encoding.

11. A method according to claim 1, in which the transmitter is a base station operating according to a code division multiple access (CDMA) or wideband code division multiple access (W-CDMA) transmission scheme.

12. A method according to claim 11, in which the base station operates in accordance with the Universal Mobile Telecommunications System (UMTS) standard.

13. A transmitter for mobile telecommunications comprising at least two transmit antennas, a space time block encoder, a linear transformation apparatus operative to transform a data sequence from or to a space time block encoder so as to at least partially compensate for channel variations, a processor operative to receive channel state information and to estimate reliability of the channel state information, and a processor operative to determine the linear transformation to be applied dependent upon the channel state information and the estimated reliability of the channel state information.

14. A transmitter according to claim 13, in which the channel state information is cnannel estimates.

15. A transmitter according to claim 13, in which the reliability of the channel state information is determined from latest channel state information and previous channel state information.

16. A transmitter according to claim 15, in which the latest channel state information is given a weight relative to the previous channel state information, the weight being dependent upon channel state information stability.

17. A transmitter according to claim 13, in which where the channel state information is channel estimates in the form of channel coefficients, and the channel state information for a time interval (n) is assumed accurate for the previous time interval (n-1), the channel state information reliability (ρ) is determined as

$$\rho(1) = 0$$

$$\rho(n) = (1-\alpha)\mathbf{hf}^* + \alpha\rho(n-1)$$

where **h** is the channel vector, **f** is the latest channel state information , and α is a forgetting factor.

18. A transmitter according to claim 17, in which α is selected dependent on the size of the variation between the latest channel state information and the last previous channel state information.

19. A transmitter according to claim 13, in which the linear transformation apparatus transforms the data sequence before it is applied to the block encoder.

20. A transmitter according to claim 15, in which the linear transformation apparatus transforms the data sequence after it is applied to the block encoder.

21. A transmitter according to claim 13, in which the space-time block encoder operates such that at a first transmission time instant a first symbol is transmitted from a first of the two antennas and a second symbol is transmitted from the second of the two antennas, then at the next transmission instant a negative complex conjugate of the first symbol is transmitted from the first antenna and a complex conjugate of the second symbol is transmitted from the second antenna.

22. A transmitter according to claim 21, in which the space-time block encoder is Alamouti space-time block encoder.

23. A transmitter according to claim 13, which is a base station operating according to a code division multiple access (CDMA) or wideband code division multiple access (W-CDMA) transmission scheme.

24. A transmitter according to claim 23, which operates in accordance with the Universal Mobile Telecommunications System (UMTS) standard.

25. A receiver for mobile communications comprising a space time block decoder and a channel estimator, a processor operative to estimate channel state information reliability from channel state information provided by the channel estimator, and a processor operative to determine the linear transformation that was applied to received data dependent upon the channel state information and the estimated reliability of the channel state information.

26. A receiver according to claim 25, which is a mobile user terminal operating in accordance with UMTS or another wideband-code division multiple access (W-CDMA) or code division multiple access (CDMA) standard.

27. A network for mobile telecommunications comprising a transmitter and a receiver,

the transmitter comprising a space-time block encoder and a linear transformation apparatus operative to transform a data sequence from or to the space-time block encoder by applying a linear transformation so as to at least partially compensate for channel variations, the transmitter comprising at least two transmit antennas,

the receiver comprising a space-time block decoder and a channel estimator, a processor operative to estimate channel state information reliability from channel state information provided by the channel estimator, and a processor operative to determine the coefficients of a further linear transformation matrix dependent upon the channel state information and the estimated reliability of the channel state information to be applied to a further data sequence for transmission,

the coefficients of the further linear transformation matrix being sent from the receiver to the transmitter for use.